

ABSTRACT

A changeable pattern and implementation is presented in which types (used in programming environments and virtual machines) may be mutable as controlled by a programmer, and share many of the benefits of value types, without the drawbacks of value types. The changeable pattern provides flexibility for restricting the modifiability of the resultant uses of the values, as well as providing a means for providing notifications upon changes. In one implementation, a single set of changeable types is provided that derive from a common Changeable base class, and any type for which mutability is desired may derive from the Changeable class. Properties associated with the changeable define state that determines cloning and/or changeability characteristics on subsequent uses of the type. True mutability is provided via a status property of next use being set to a changeable reference state such that subsequent uses of the type do not cause a state change.

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